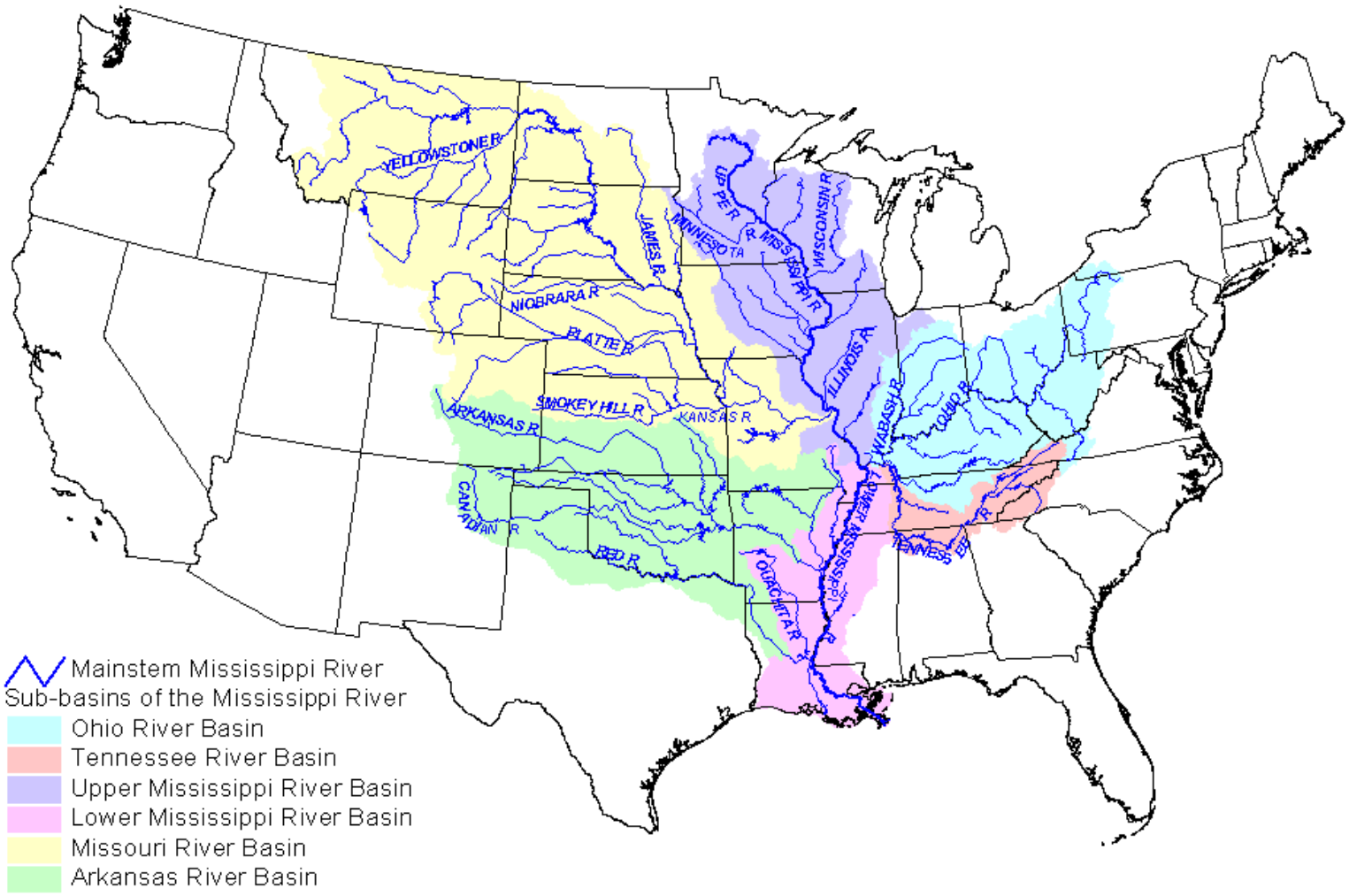
Upper Mississippi River Basin

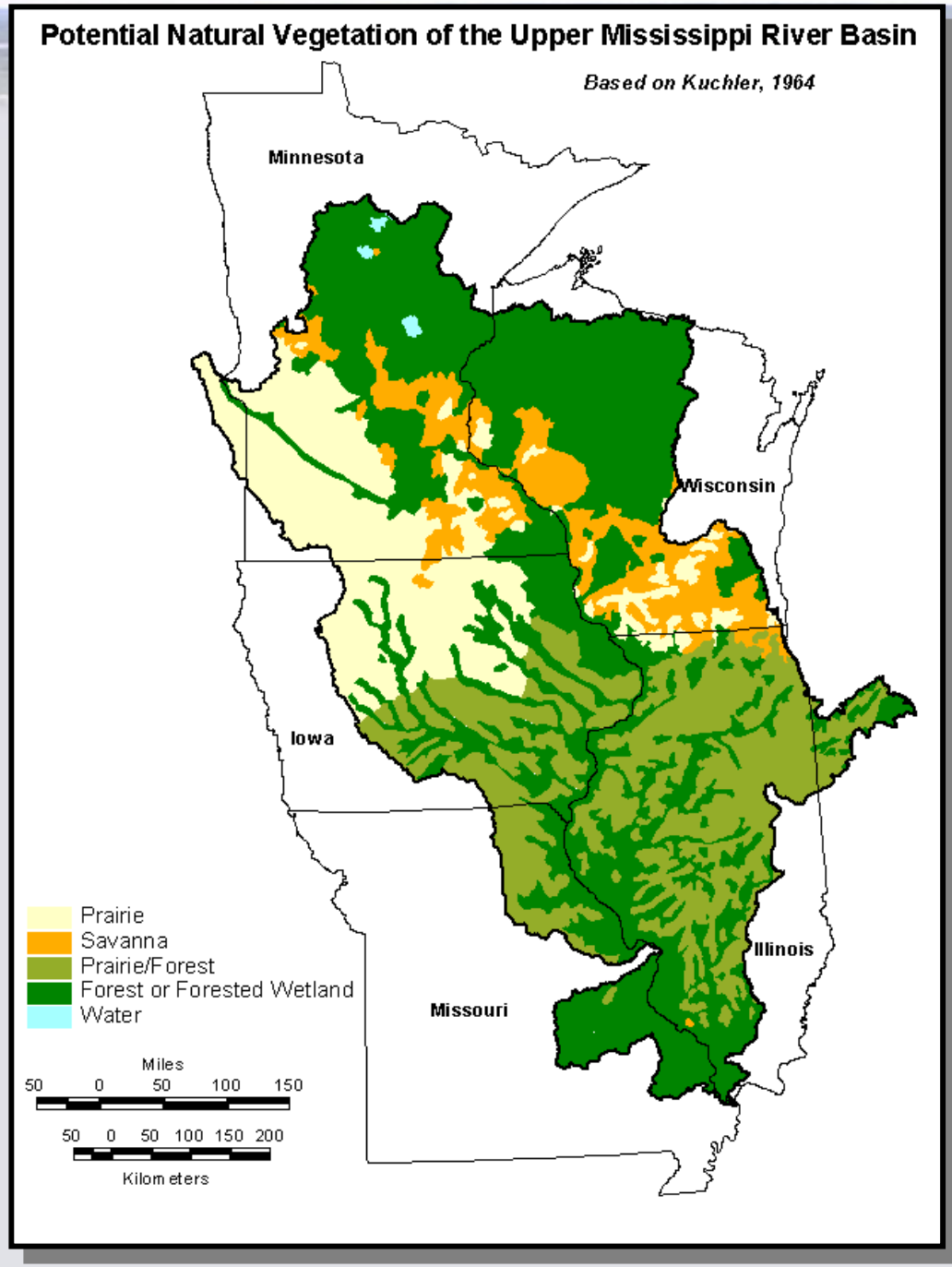
Nutrient Management Activities

June 2003

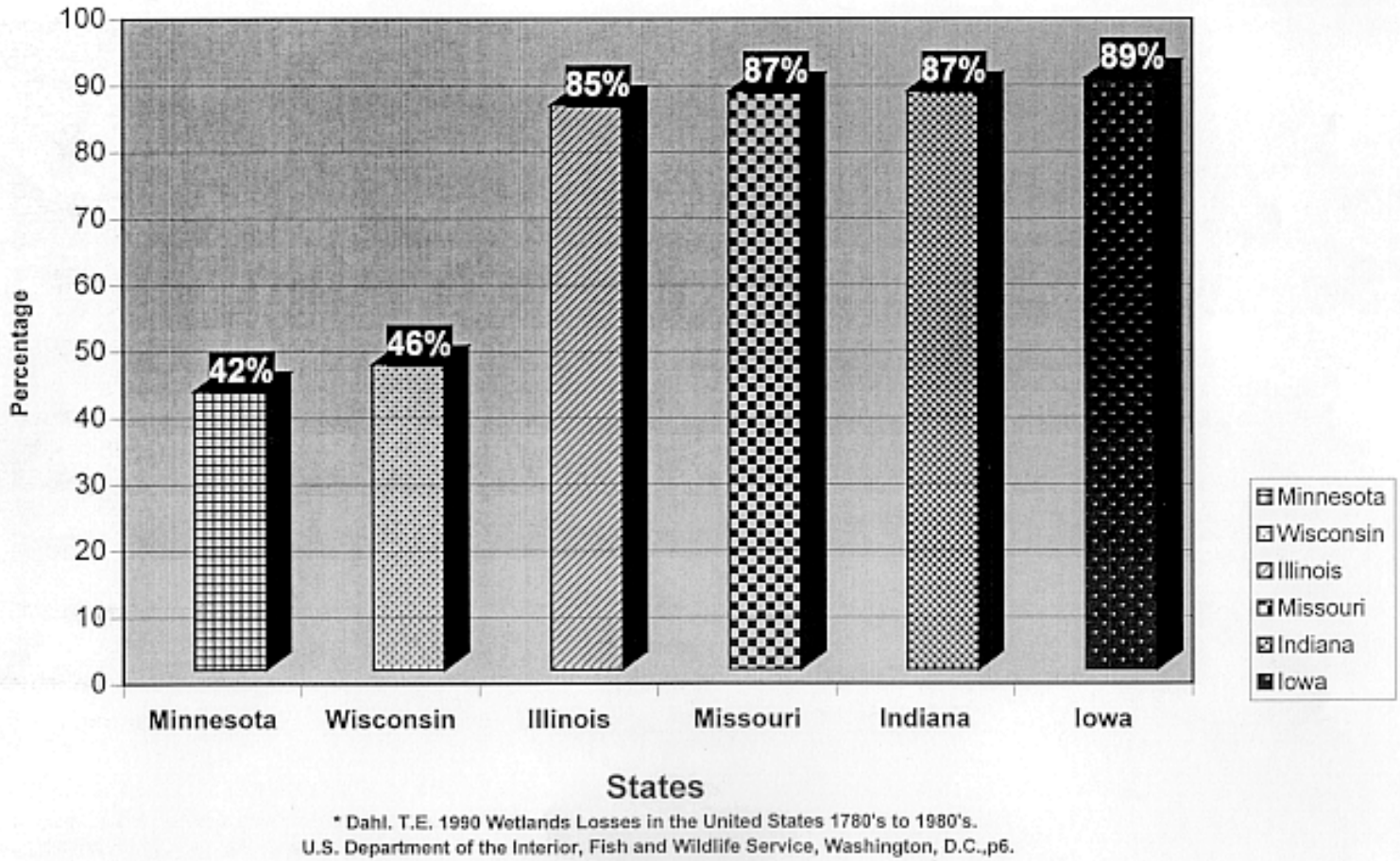
Mississippi River Basin



The Upper Mississippi River Basin


Potential Natural Vegetation of the Upper Mississippi River Basin
Based on Kuchler, 1964
Minnesota
Wisconsin
Iowa
Illinois
Missouri
Prairie
Savanna
Prairie/Forest
Forest or Forested Wetland
Water
Miles
50 0 50 100 150
50 0 50 100 150 200
Kilometers

Percentage of Wetland Losses in the Upper Mississippi River Basin States: 1780's to 1980's *

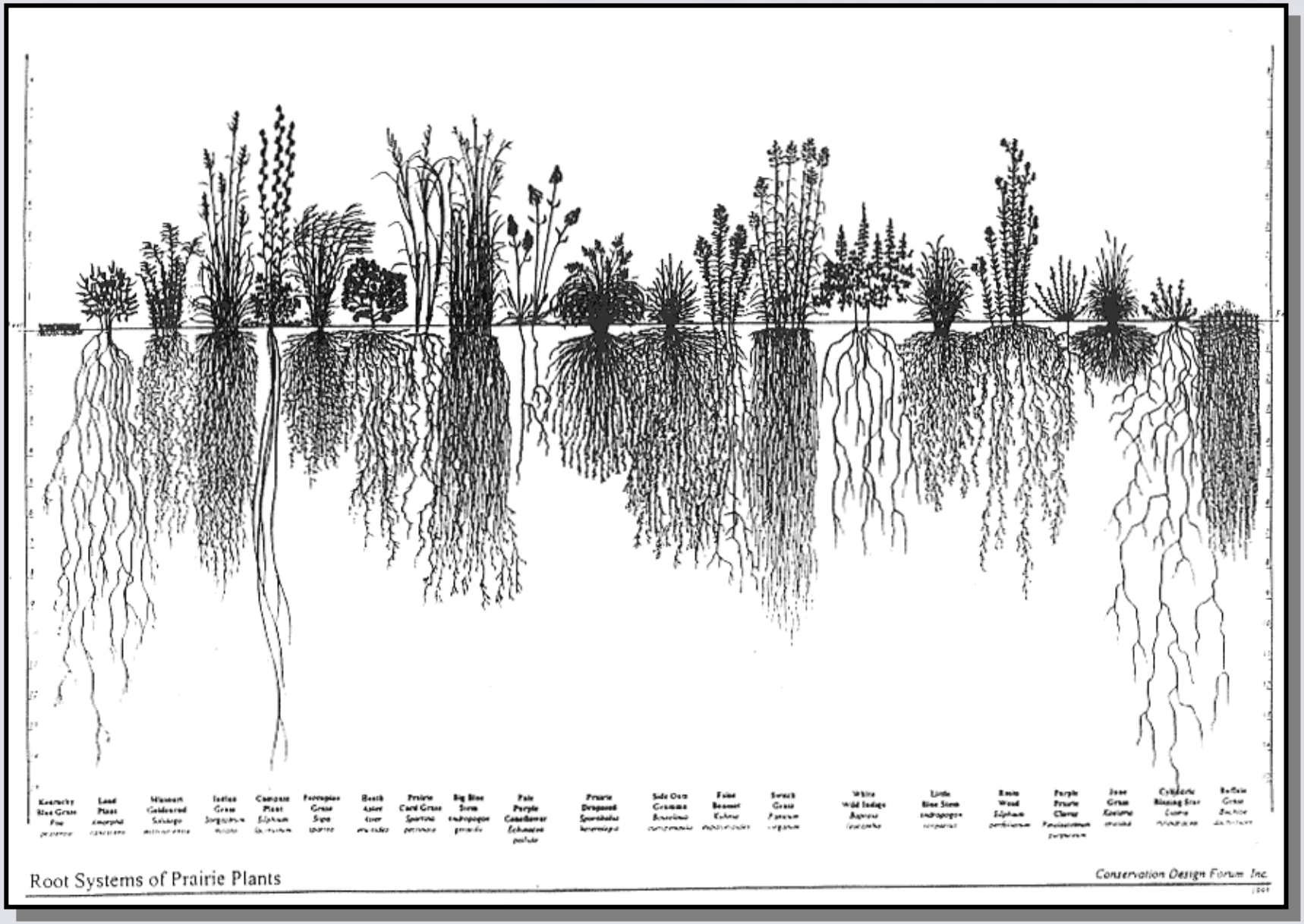


* Dahl. T.E. 1990 Wetlands Losses in the United States 1780's to 1980's. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C.,p6.

Grassland Losses

	Historic Acreage (ha)	Current Acreage (ha)	Decline
Illinois	8,900,000	900	99.9%
Indiana	2,800,000	404	99.9%
Iowa	12,500,000	12,140	99.9%
Kansas	6,900,000	1,200,000	82.6%
Minnesota	7,300,000	30,350	99.6%
Missouri	5,700,000	30,350	99.5%

Root Systems of Prairie Plants



Upper Mississippi River Basin Current Landuses

• Agriculture	67%
• Idle Agriculture	4%
• Urban	3%
• Forestry	9%
• Federal	12%
• Other	5%

Longitudinal Changes in Mississippi River Floodplain Structure

by
Robert L. Delaney[1] and Mary R. Craig[2]

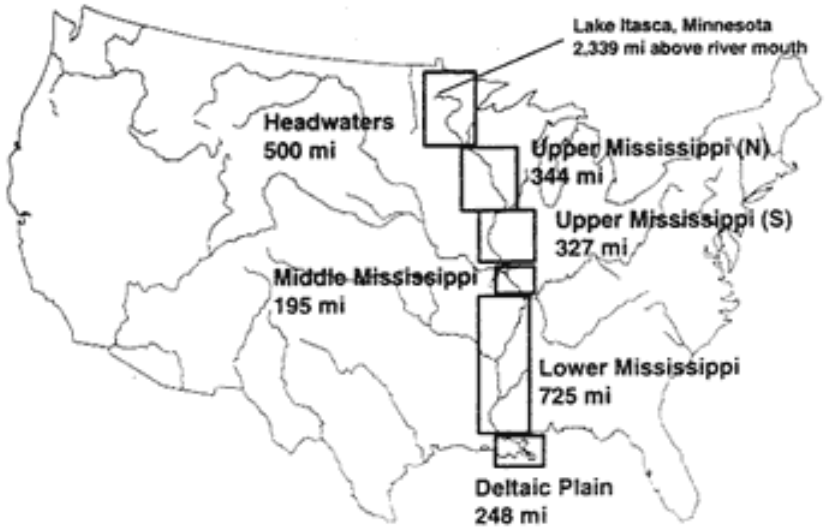


Figure 1. Mississippi River Segments

Table 1. Mississippi River Floodplain

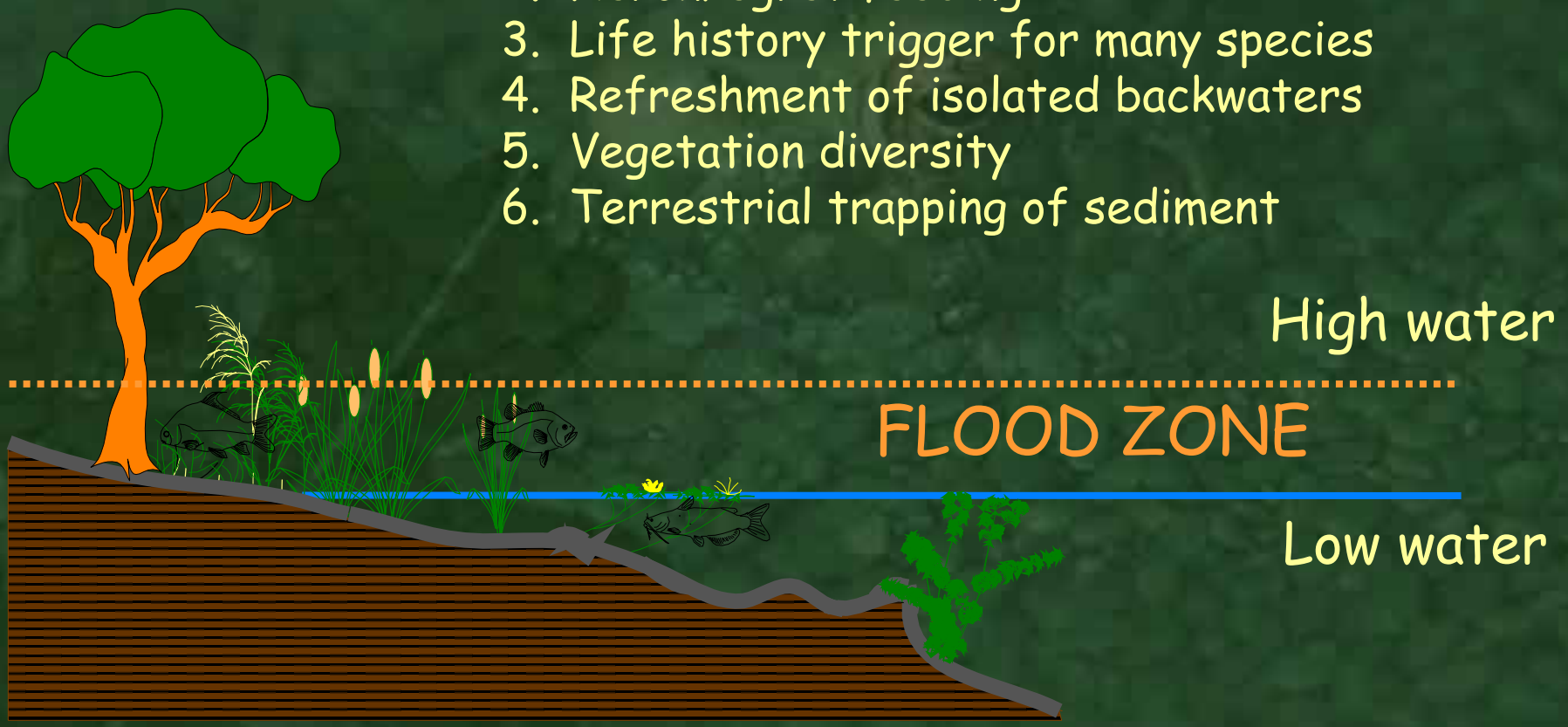
River Segment	*Approximate Floodplain Acres in 1,000s*	*Percent of Floodplain Behind Levees*
Headwaters	328	<0.01%
Upper Mississippi (N)	496	3%
Upper Mississippi (S)	1,006	53%
Middle Mississippi	663	82%
Lower Mississippi	25,000	93%
Deltaic Plain	3,000	96%
TOTALS	30,493	90%

Habitat Alteration

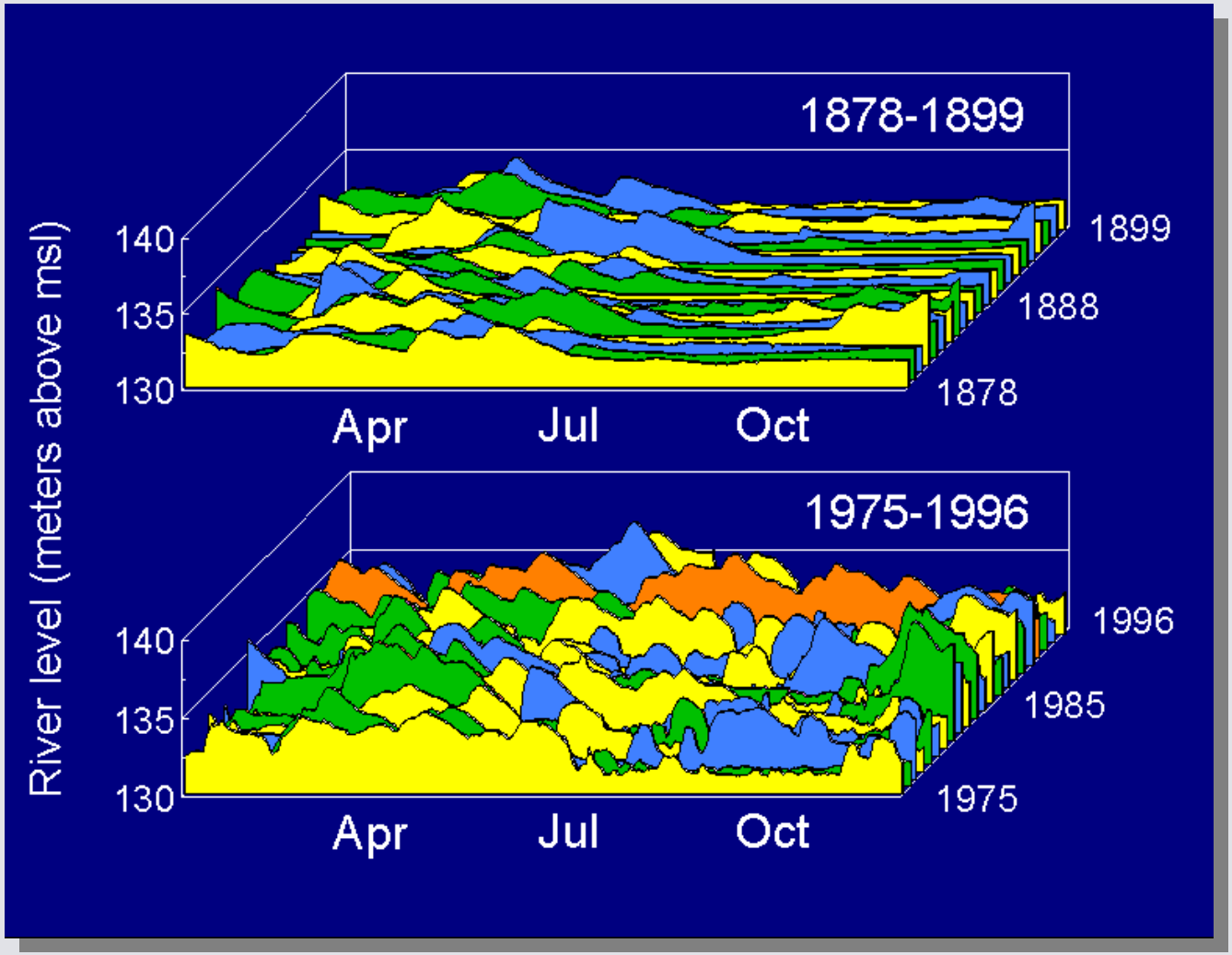
River Segment	Floodplain Acreage (1000's)	% of Floodplain Behind Levees
Upper Mississippi (N)	496	3%
Upper Mississippi (S)	1,006	53%
Middle Mississippi	663	82%
Lower Mississippi	25,000	93%
Deltaic Plain	3,000	96%
Totals	*30,493*	*90%*

Ecological values of annual floodpulse

1. Fish spawning, feeding, growth
2. Heron/egret feeding
3. Life history trigger for many species
4. Refreshment of isolated backwaters
5. Vegetation diversity
6. Terrestrial trapping of sediment



After a century of human alteration:



Post-dam: "chaos"

Vegetative Patterns of Weaver Bottoms:

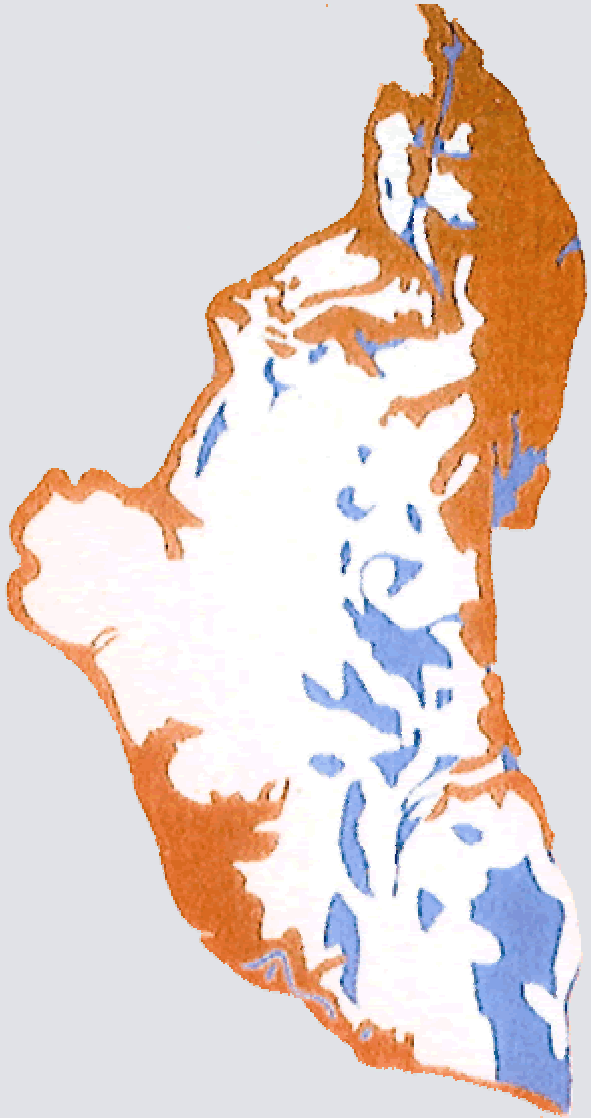
1930, Before Flooding

- Terrestrial
- Aquatic Vegetation
- Open Water

Vegetative Patterns of Weaver Bottoms:

1938

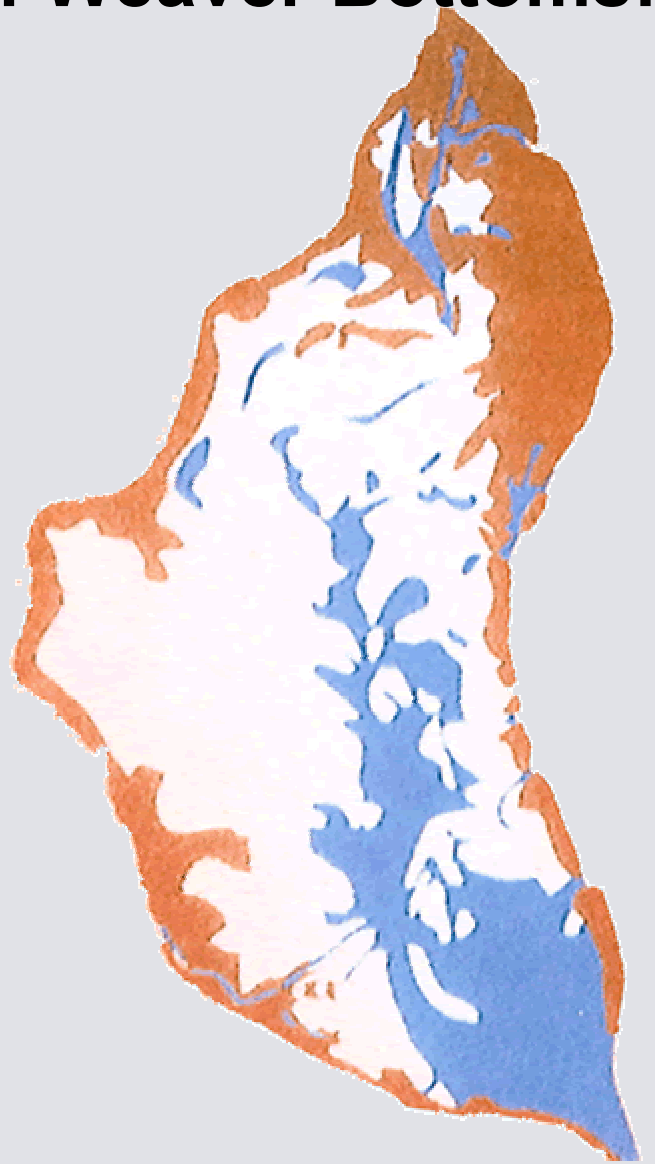
- Terrestrial
- Aquatic Vegetation
- Open Water



Vegetative Patterns of Weaver Bottoms:

1965

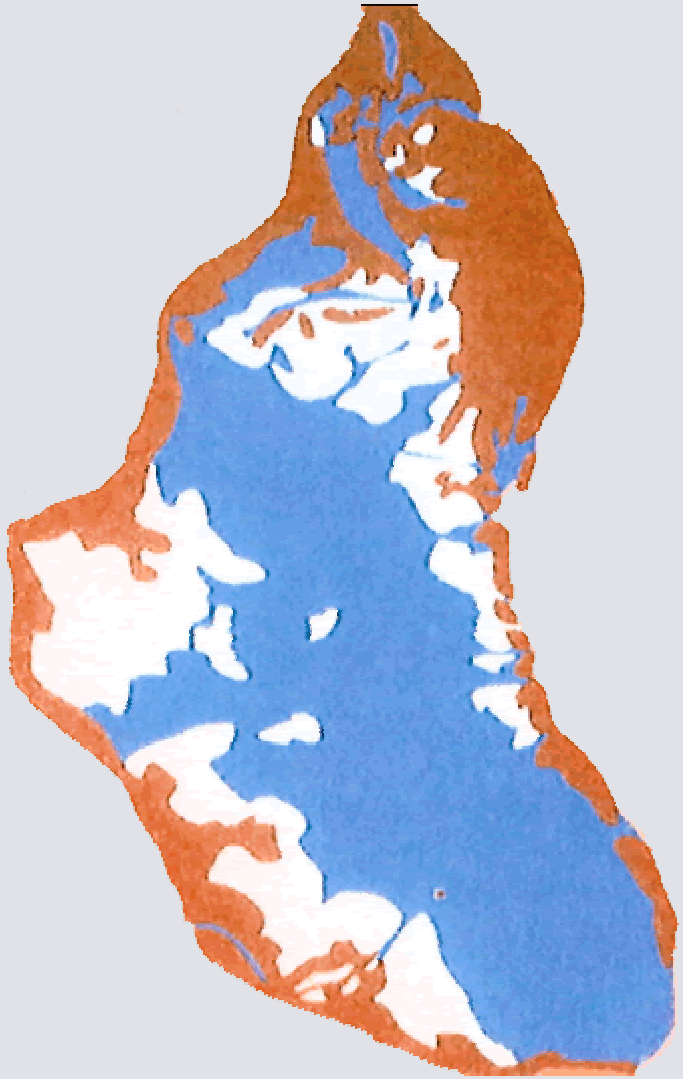
- Terrestrial
- Aquatic Vegetation
- Open Water



Vegetative Patterns of Weaver Bottoms:

1975

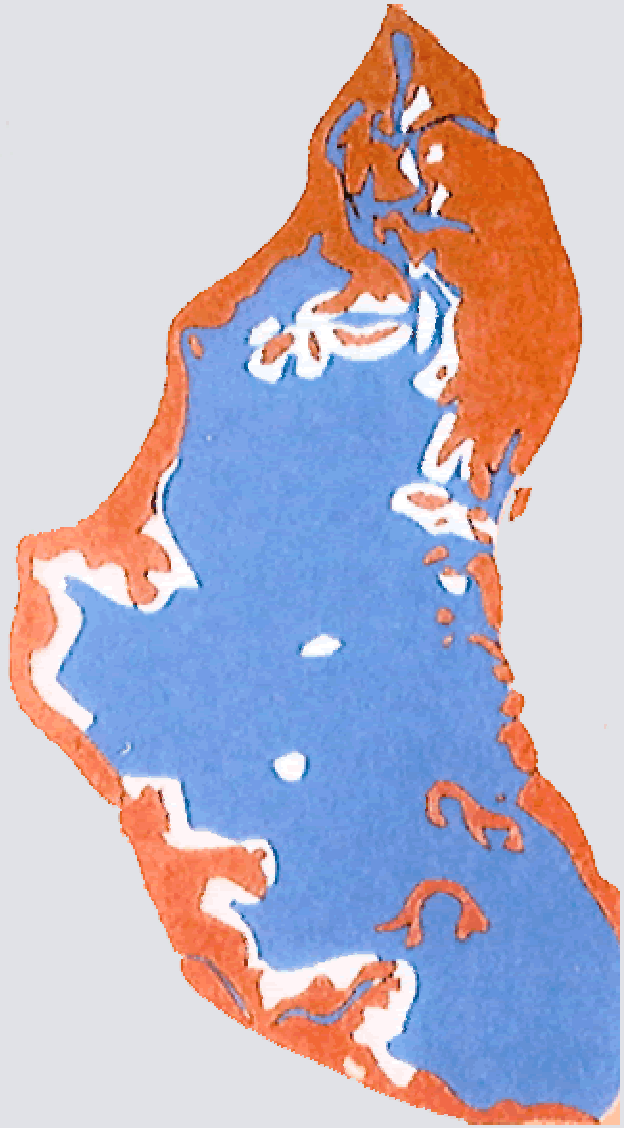
- Terrestrial
- Aquatic Vegetation
- Open Water



Vegetative Patterns of Weaver Bottoms:

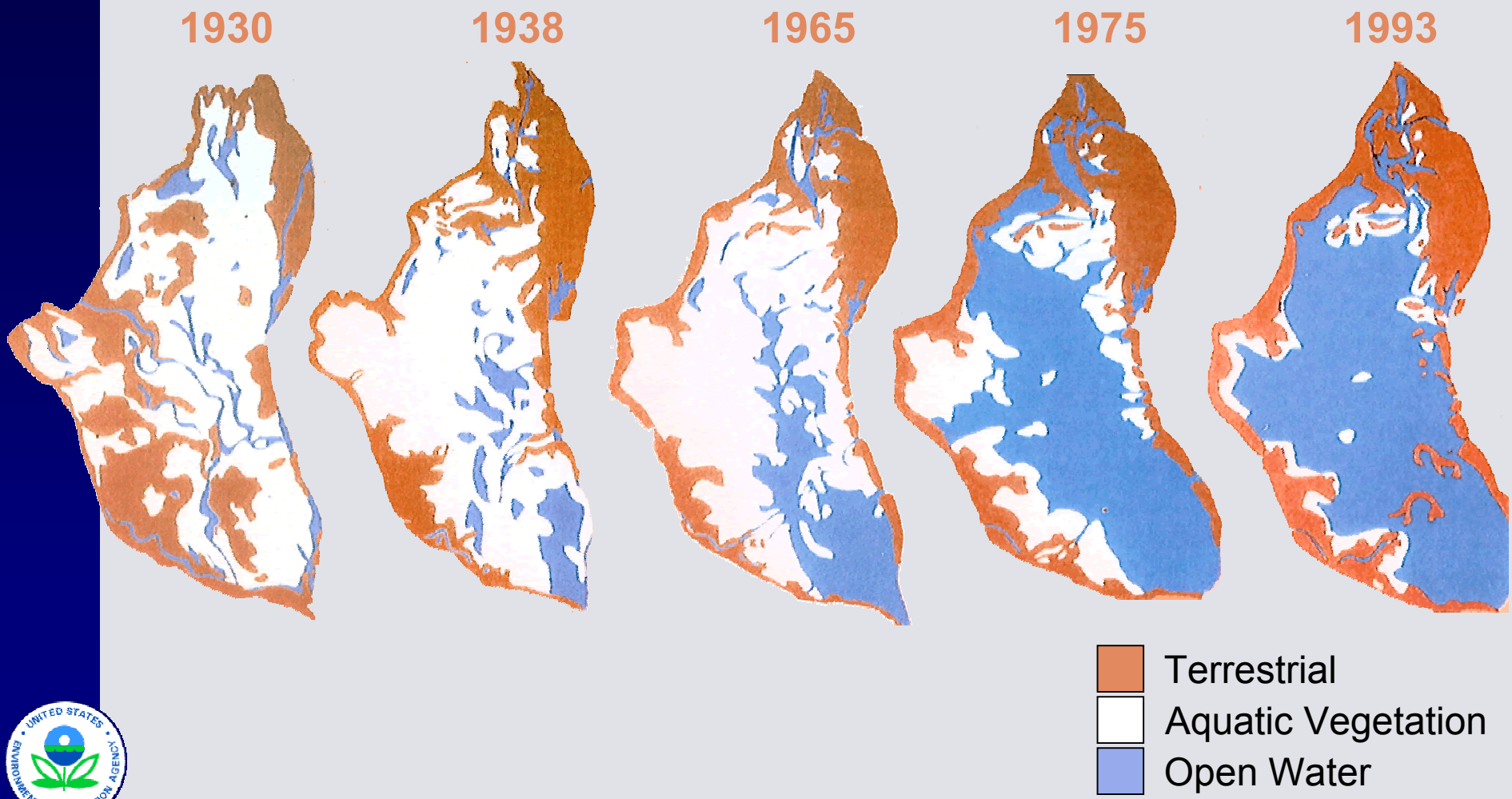
1993

- Terrestrial
- Aquatic Vegetation
- Open Water



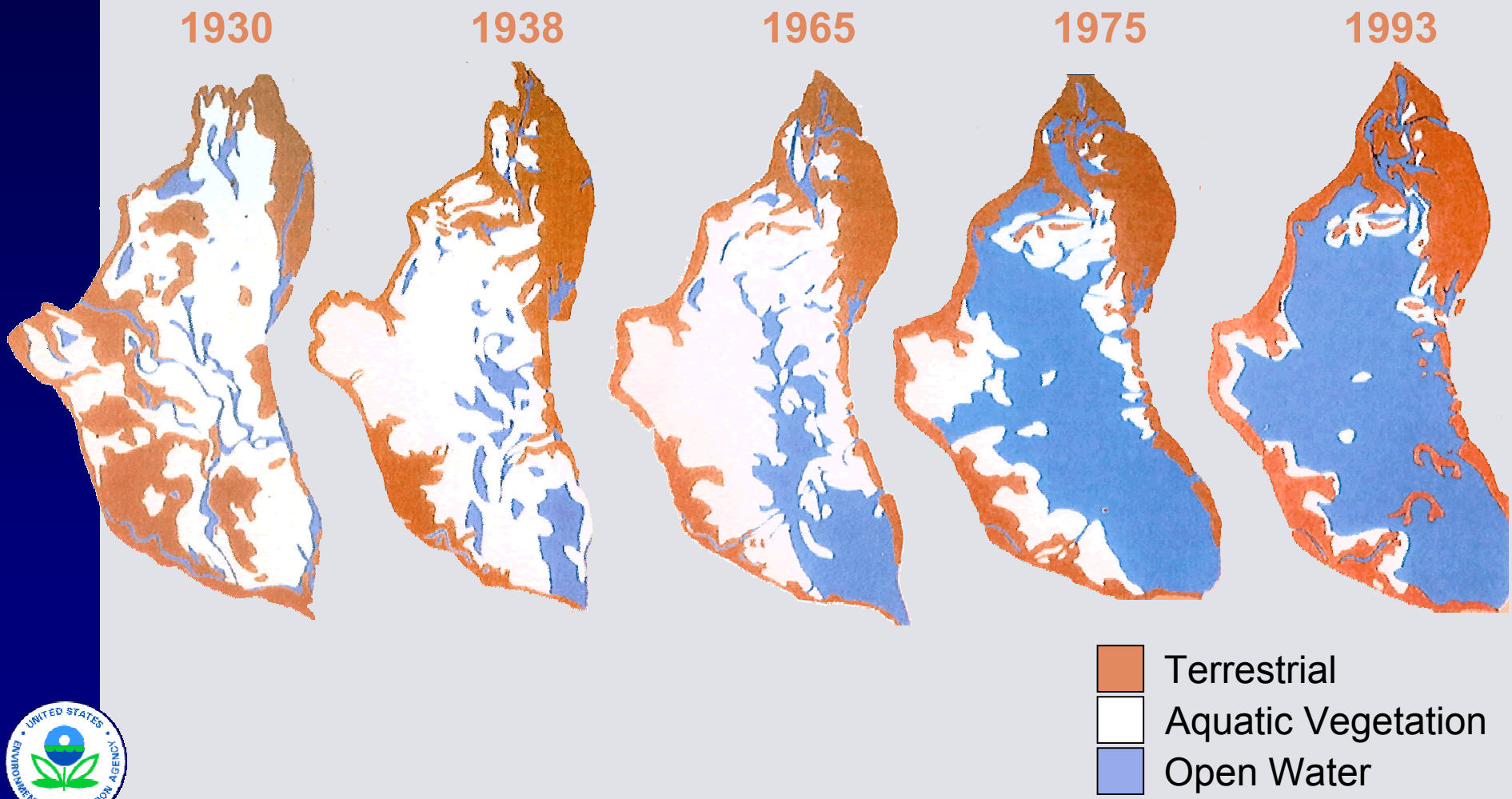
Vegetative Patterns of Weaver Bottoms:

OVERVIEW

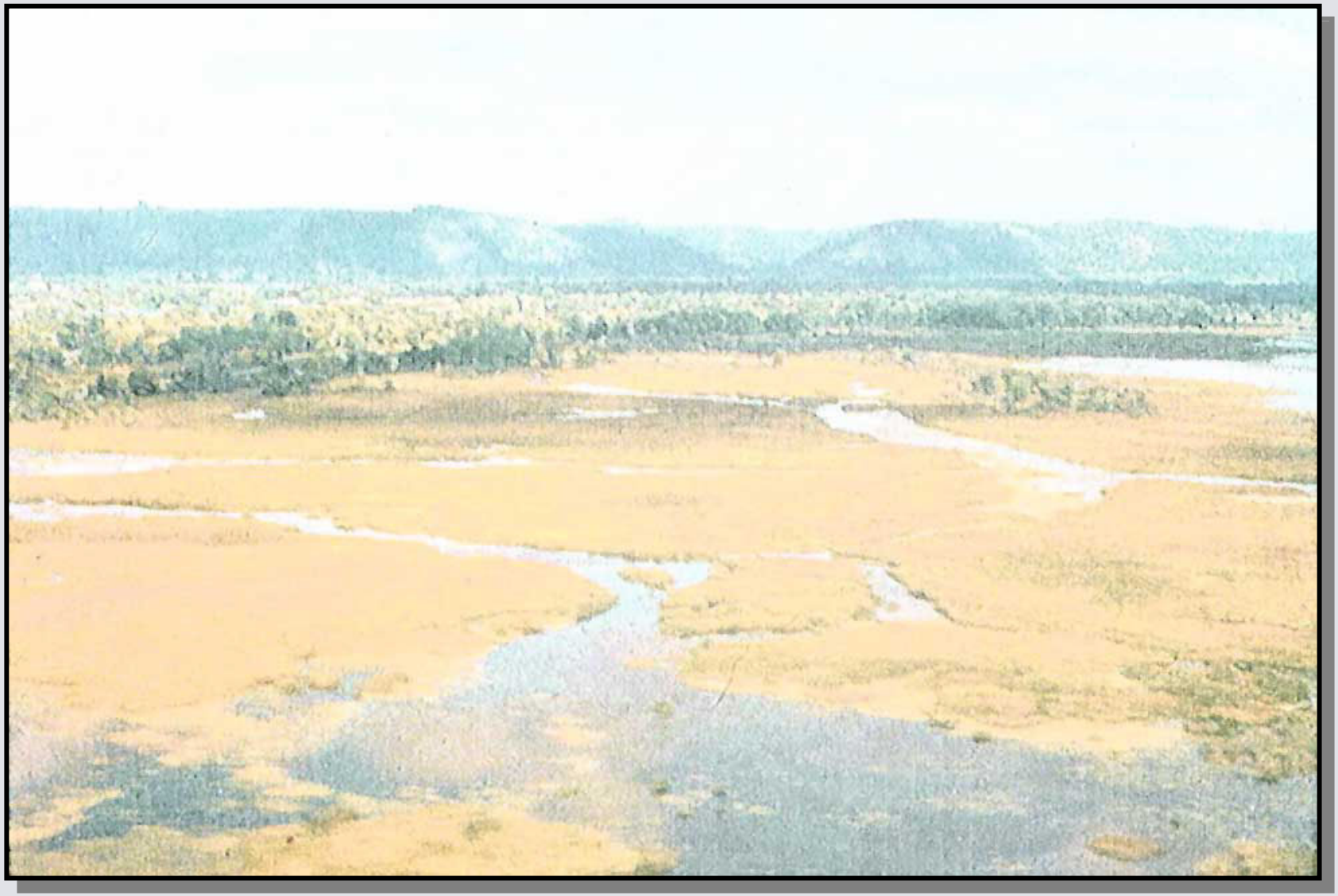


Vegetative Patterns of Weaver Bottoms:

OVERVIEW



Weaver Bottoms – 1950s



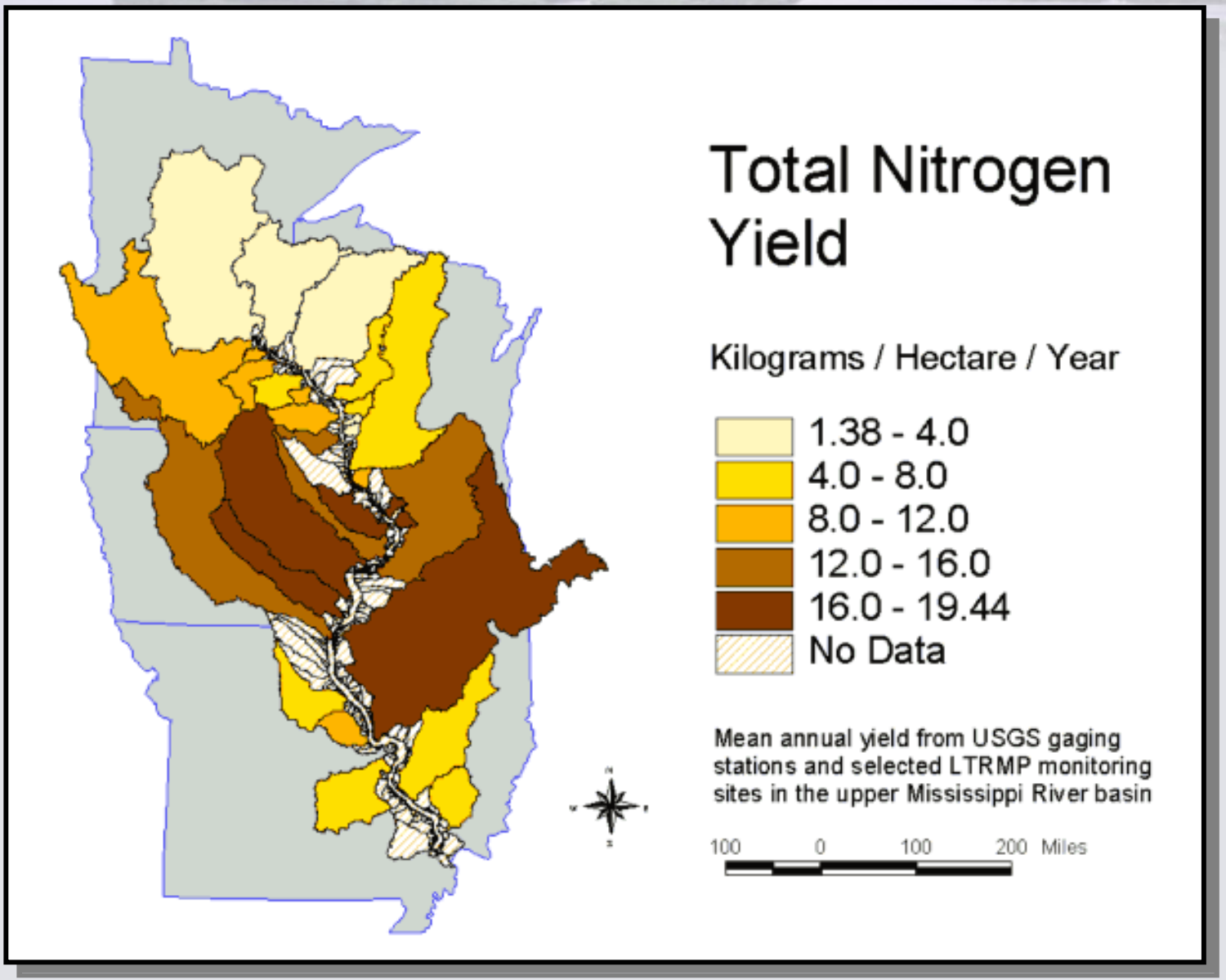
Weaver Bottoms – Current

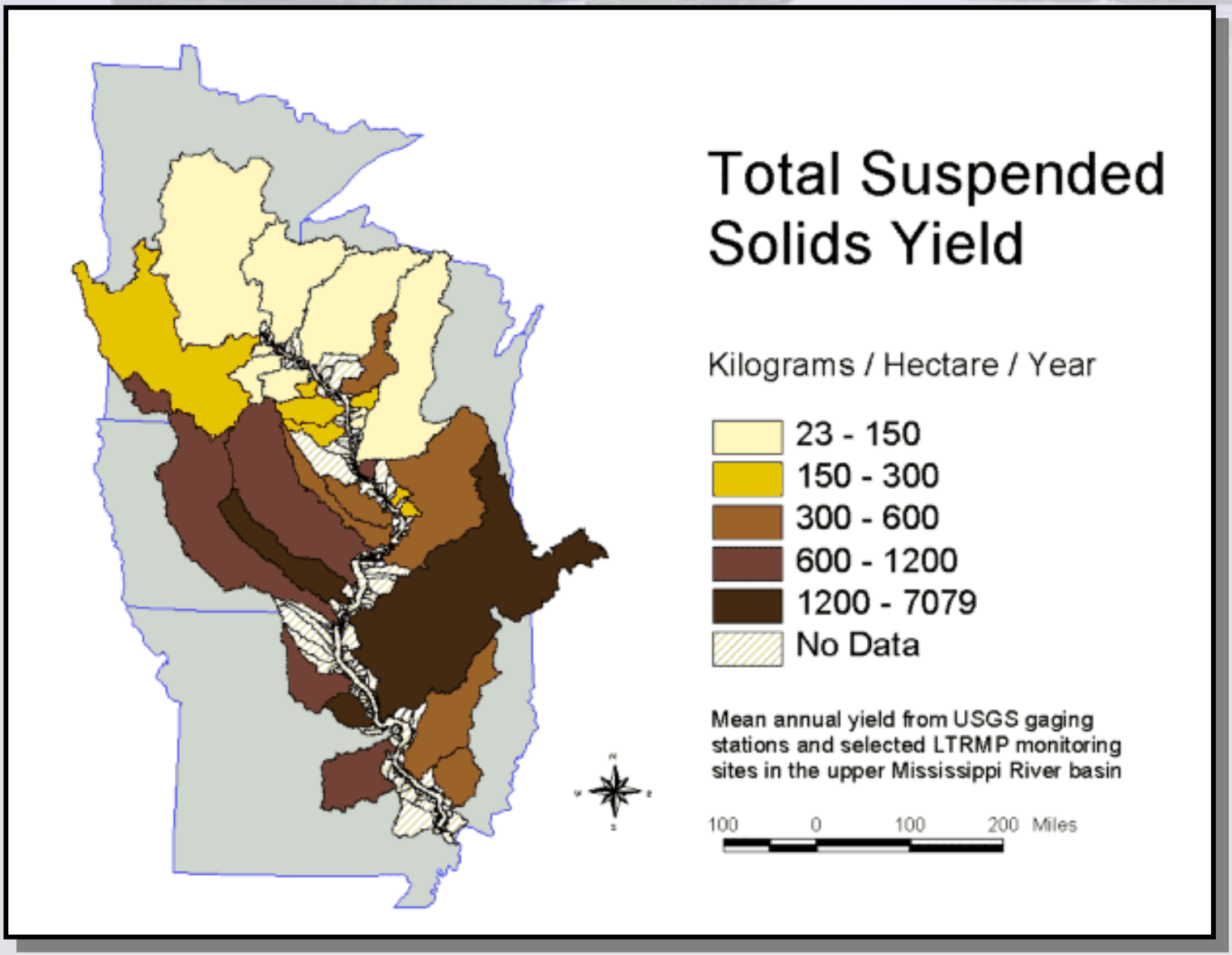
US EPA'S Role

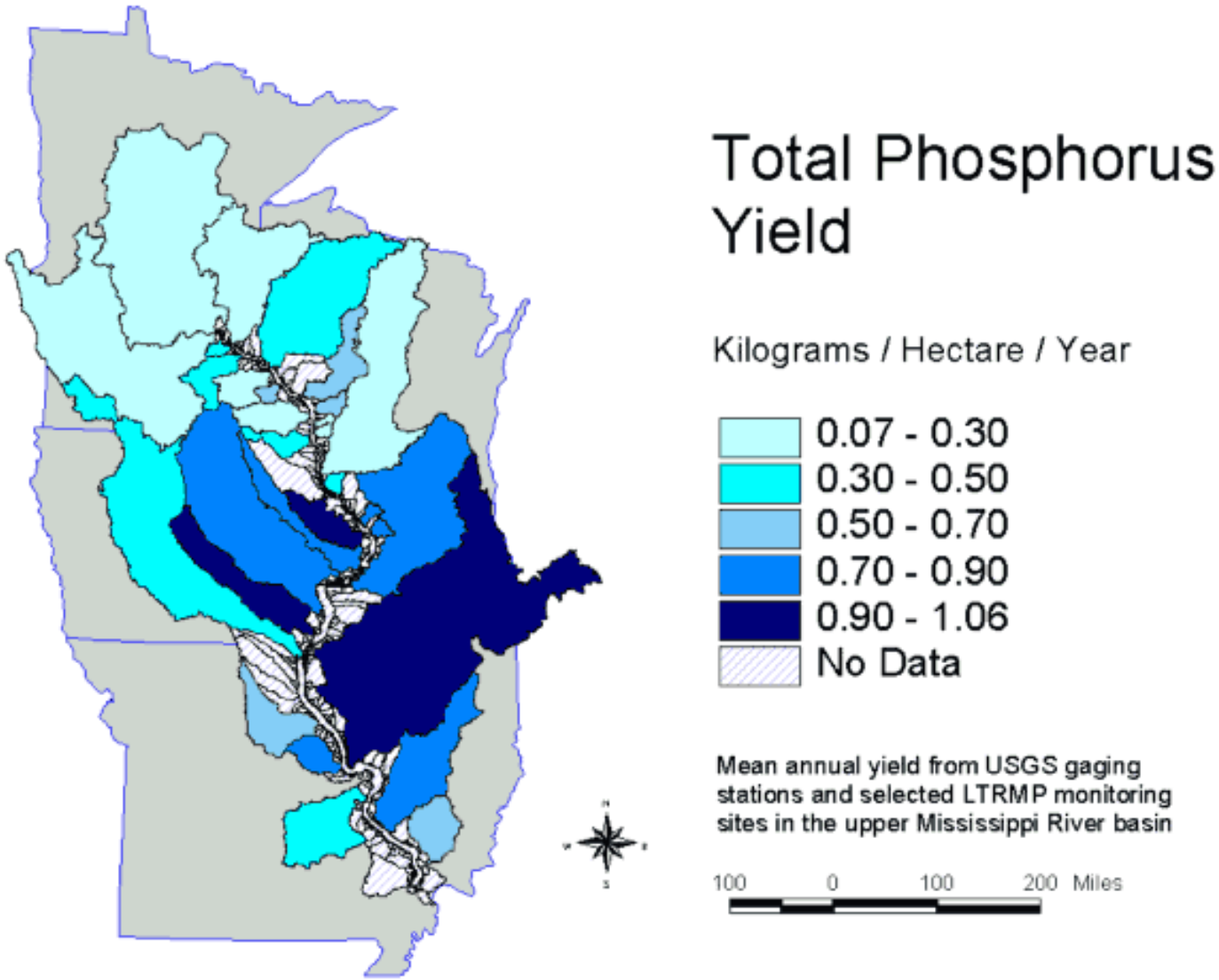
- Aiding in the identification of environmental problems
- Working in watersheds
- Supporting the State's efforts

Aiding in the Identification of Environmental Problems

- Upper Mississippi River Data Base
- Fate and Transport Studies
- Further Watershed Analyses
- Pilot Projects
- Benefits of Existing Projects


Total Nitrogen Yield
Kilograms / Hectare / Year
1.38 - 4.0
4.0 - 8.0
8.0 - 12.0
12.0 - 16.0
16.0 - 19.44
No Data
Mean annual yield from USGS gaging stations and selected LTRMP monitoring sites in the upper Mississippi River basin
100 0 100 200 Miles


Total Suspended Solids Yield
Kilograms / Hectare / Year
23 - 150
150 - 300
300 - 600
600 - 1200
1200 - 7079
No Data
Mean annual yield from USGS gaging stations and selected LTRMP monitoring sites in the upper Mississippi River basin
100 0 100 200 Miles


Total Phosphorus Yield
Kilograms / Hectare / Year
0.07 - 0.30
0.30 - 0.50
0.50 - 0.70
0.70 - 0.90
0.90 - 1.06
No Data
Mean annual yield from USGS gaging stations and selected LTRMP monitoring sites in the upper Mississippi River basin
100 0 100 200 Miles

Pilot Projects

- Upper Halfway Creek (paired watershed)
- Wisconsin River Watershed (nutrient trading)
  - Baraboo River

Existing Projects

- Environmental Management Program (Water Resources Development Act 1986)

- CREP, USDA
  - Minnesota River, MN
  - Illinois River, IL
  - Raccoon River, IA

- The Nature Conservancy Project
  - Spunky Bottoms
  - Emiquon

- Nutrient Farming
  - Hennipin Flood Control District